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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,500	01/02/2002	David Castiel	10636/005002	6365

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EXAMINER

DEAN, RAYMOND S

ART UNIT PAPER NUMBER

2684

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/038,500

Applicant(s)

CASTIEL ET AL

Examiner

Raymond S. Dean

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 7 and 11 - 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 7 and 11 - 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, see amendment filed July 7, 2005 with respect to the rejection(s) of claim(s) 1 – 7 and 11 – 12 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art Gross et al. (US 6,195,037).

Examiner agrees with Applicants' assertion that Porcelli in view of Cellier does not teach first and second ground tracks that are different. Gross teaches first and second ground tracks that are different (See Column 5 lines 8 – 10).

Examiner respectfully disagrees with Applicants' assertion that there is a failure in making a prima facie case of obviousness for the combination of Porcelli and Cellier. It would have been obvious to modify the satellite system of Porcelli with the second group of satellites taught by Cellier for purpose of providing service to a larger area thereby enabling a plurality of other parts of the world to receive service as taught by Cellier (See Cellier Column 4 lines 44 – 46, the motivation comes from Cellier). Porcelli and Cellier both teach a satellite system comprising geostationary, inclined, and elliptical orbits thus the modification of the Porcelli system with the second group of satellites of the Cellier system can be modified with a reasonable expectation of success. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that

any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the satellite system of Porcelli in view of Cellier with the plurality of different ground tracks concept taught by Gross for the purpose of creating overlapping antenna patterns thus enabling a mobile user on the ground to be handed off. The mobile user, as a result of said handoff, will receive uninterrupted service as taught by Gross.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 4, 6 – 7, and 11 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Porcelli et al. (WO 98/51022) in view of Cellier (US 6,327,523) and in further view of Gross et al. (US 6,195,037).

Regarding Claim 1, Porcelli teaches a satellite system, comprising: a plurality of satellites in inclined elliptical orbits, each said satellite communicating with a land mass on the Earth (Figure 3A, Figure 3B, Page 10 lines 15 – 21, the satellites will communicate with users and ground stations on the earth), at least a first group of said satellites being in common orbits having the same, first, repeating ground track communicating with plural specified land mass on the earth (Figure 1C, Figure 3A, Figure 3B, Page 14 lines 14 – 17, Page 15 lines 5 – 11, the ground track covers a plurality of continents), each said satellite communicating during only a portion of the elliptical orbit closest to apogee (Page 12 lines 8 – 14).

Porcelli does not specifically teach a second group of said satellites being in common orbits having the same, second, repeating ground track, different than said first ground track, and communicating with second plural specified land masses on the earth.

Cellier teaches a second group of said satellites being in common orbits having the same, second, repeating ground track, (Column 4 lines 33 – 40), and communicating with second plural specified land masses on the earth (Figure 4, Column 4 lines 53 – 56, the ground track covers a plurality of continents).

Porcelli and Cellier both teach a satellite system comprising satellites in geo-stationary, inclined, elliptical orbits thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the second group of satellites taught in Cellier in the satellite system of Porcelli for the purpose of providing satellite coverage to a plurality of other parts of the world as taught by Cellier.

Porcelli in view of Cellier does not teach a second repeating ground track different than said first ground track.

Gross teaches a second ground track different than a first ground track (Column 5 lines 8 – 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the satellite system of Porcelli in view of Cellier with the plurality of different ground tracks concept taught by Gross for the purpose of creating overlapping antenna patterns thus enabling a mobile user on the ground to be handed off. The mobile user, as a result of said handoff, will receive uninterrupted service as taught by Gross.

Regarding Claim 2, Porcelli in view of Cellier and in further view of Gross teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein said only a portion is approximately 60% of its total orbiting time (Page 16 lines 19 – 21, Page 17 lines 1 – 2, the orbital time is 12 hours, a three satellite system will have 8 loop hours, which is approximately 60% of said orbital time).

Regarding Claim 3, Porcelli in view of Cellier and in further view of Gross teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein said first land mass locations represent populated portions on the earth (Figure 1C, the ground track covers a plurality of continents, said continents comprise populated portions on the earth).

Regarding Claim 4, Porcelli in view of Cellier and in further view of Gross teaches all of the claimed limitations recited in Claim 3. Cellier further teaches a third group of

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said satellites being in common orbits having the same, third ground track (Column 4 lines 42 – 47, each orbital plane can comprise a group IEGO satellites, said IEGO satellites will share a ground track), Gross further teaches a third ground track different than said first and second ground tracks (Column 5 lines 8 – 10, there are a plurality of ground tracks).

Regarding Claim 6, Porcelli in view of Cellier and in further view of Gross teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein the apogee of the satellites are approximately  $\frac{3}{4}$  the altitude or less of geo stationary satellites (Figures 3A, 3C, when the satellites are at apogee said satellites will be closer to the earth than a geo-stationary satellite, the distance of said satellites from the earth can be  $\frac{3}{4}$  the distance of said geo-stationary satellite to the earth or less).

Regarding Claim 7, Porcelli in view of Cellier and in further view of Gross teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein each ground track covers three continents (Figure 1C, Page 15 lines 5 – 11).

Regarding Claim 11, Porcelli teaches a constellation of satellites, comprising: plurality of satellites in elliptical orbits around the earth with the earth at one focus of the elliptical orbit (Figure 3A, Figure 3B, Page 10 lines 15 – 21), and each elliptical orbit having an apogee and a perigee (Figure 3A, Figure 3B), each said satellite communicating with a portion of the Earth (Page 10 lines 15 – 21, the satellites will communicate with users and ground stations on the earth), at least a first group of said satellites being in common orbits having the same, first, ground track (Figure 3A, Figure 3B, Page 14 lines 14 – 17), wherein each of said satellites is active for only a

predetermined portion of its orbiting time, closest to its apogee portion (Page 12 lines 8 – 14), and wherein the satellites in said first group are spaced such that when a first satellite in the sub-constellation reaches its inactive portion, another satellite in the sub-constellation becomes active (Page 17 lines 3 – 16).

Porcelli does not teach a second group of said satellites being in common orbits having the same, second, ground track, different than said first ground track.

Cellier teaches a second group of said satellites being in common orbits having the same, second, ground track (Column 4 lines 33 – 40).

Porcelli and Cellier both teach a satellite system comprising satellites in geostationary, inclined, elliptical orbits thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the second group of satellites taught in Cellier in the satellite system of Porcelli for the purpose of providing satellite coverage to a plurality of other parts of the world as taught by Cellier.

Porcelli in view of Cellier does not teach a second ground track different than said first ground track.

Gross teaches a second ground track different than a first ground track (Column 5 lines 8 – 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the satellite system of Porcelli in view of Cellier with the plurality of different ground tracks concept taught by Gross for the purpose of creating overlapping antenna patterns thus enabling a mobile user on the ground to be handed



off. The mobile user, as a result of said handoff, will receive uninterrupted service as taught by Gross.

Regarding Claim 12, Porcelli in view of Cellier and in further view of Gross teaches all of the claimed limitations recited in Claim 11. Cellier further teaches wherein a first satellite is descending when it becomes inactive, and another satellite is ascending when it becomes active (Column 4 lines 60 – 66).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Porcelli et al. (WO 98/51022) in view of Cellier (US 6,327,523).

Regarding Claim 5, Porcelli teaches a communication system, comprising: a plurality of ground stations, each including communication equipment for communicating with a satellite in orbit (Page 12 lines 18 – 21, Page 13 line 1, the ground stations will communicate with the operational satellite); and a plurality of satellites in respective orbits, said respective orbits including a first sub-constellation orbit with a plurality of satellites (Figure 3A, Figure 3B, Page 10 lines 15 – 21) therein, each of said plurality of satellites following a repeating ground track that repeats an integral number of times each day and each repeating ground track optimized for covering more than one specific land mass on the earth, including a first sub-constellation optimized for covering first land masses (Figure 1C, Figure 3A, Figure 3B, Page 14 lines 14 – 17, Page 15 lines 5 – 11, the ground track covers a plurality of continents).

Porcelli does not teach a second sub-constellation optimized for covering second land masses, and a third sub-constellation optimized for covering third land masses.

Cellier teaches a second sub-constellation optimized for covering second land masses (Figure 4, Column 4 lines 53 – 56, the ground track covers a plurality of continents) and a third sub-constellation optimized for covering third land masses. (Column 4 lines 42 – 47, each orbital plane can comprise a group IEGO satellites, which is a constellation, said IEGO satellites will share a ground track that can cover a plurality of areas on earth).

Porcelli and Cellier both teach a satellite system comprising satellites in geo-stationary, inclined, elliptical orbits thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the second and third constellation of satellites taught in Cellier in the satellite system of Porcelli for the purpose of providing satellite coverage to a plurality of other parts of the world as taught by Cellier.

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S. Dean whose telephone number is 571-272-7877. The examiner can normally be reached on 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A. Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Raymond S. Dean  
September 21, 2005

**EDAN ORGAD**  
**PATENT EXAMINER/TELECOMM.**

*E.O. 9/21/05*